

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Nguyen, et al

Art Unit: 1771

Serial No. 10/005,846

Examiner: V. S. Chang

Filed: December 3, 2001

For: DIFFUSION MEMBRANE

DECLARATION UNDER 37 CFR §1.132
Traversing the Claim rejections under 35 USC § 102(b) and
§103(a)

VIA FACSIMILE
571-273-8300
Total Pages: 6

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This Declaration is being filed in reply to the Office
Action dated September 20, 2007.

Dear Sir:

1. I, Ronald W. Call, declare I am a citizen of the United States of America, residing in the city of Rock Hill, in the State of South Carolina.

2. I have a BS in Chemical Engineering that I received from the University of Massachusetts in Amherst, 1980.

3. I worked as a Chemical Engineer for Allied Signal from 1983 to 1988. During this time I worked in the manufacture of high density polyethylene and polyethylene rubbers. Then in 1988 I joined Celanese Corporation working with plastics. I have worked on with membranes since 1993. Celanese Corporation went through a merger with Hoechst and then a divestiture and currently I am working for Celgard Inc., Charlotte North Carolina as a Development Engineer. I am well versed in microporous membranes made be either the Celgard® or dry process and membranes made by the wet process. Currently I am an inventor in over 6 issued US patents to separator membranes.

4. Currently I am a named inventor on the instant application.

5. I have read the instant patent application, serial number 10/005,845 and I am familiar with the microporous membranes taught buy the instant invention.

6. I have read the Zimmerman et al. reference, US Patent number 3,679,540. This reference teaches the use of polymers that have a significant degree of crystallinity as differentiated from the classical elastomers. See column 4 lines 22-53.

The starting elastic film utilized in the preparation of the microporous films of the present invention should be differentiated from films formed from classical elastomers such as the natural and synthetic rubbers. With such classical elastomers the stress-strain behavior, and particularly the stress-temperature relationship, is governed by entropymechanism of deformation (rubber elasticity). The positive temperature coefficient of the retractive force, i.e., decreasing stress with decreasing temperature and complete loss of elastic properties at the glass transition temperatures, are particularly consequences of entropy-elasticity. The elasticity of the starting elastic films utilized herein, on the other hand, is of a different nature. In qualitative thermodynamic experiments with these elastic starting films, increasing stress with decreasing temperature (negative temperature coefficient) may be interpreted to mean that the elasticity of these materials is not governed by entropy effects but dependent upon an energy term. More significantly, the starting elastic films have been found to retain their stretch properties at temperatures where normal entropylasticity could no longer be operative. Thus, the stretch mechanism of the starting elastic films is thought to be based on energy-elasticity relationships, and these elastic films may then be referred to as "non-classical" elastomers.

As stated, the starting elastic films employed in this invention are made from a polymer of a type capable of developing a significant degree of crystallinity, as contrasted with more conventional or "classical" elastic materials such as the natural and synthetic rubbers which are substantially amorphous in their unstretched or tensionless state.

7. As a person skilled in the art of the dry stretch process, I can verify that at the time of the invention it was the common belief, in the dry process that starting polymers should be those, which have a significant degree of crystallinity as taught by the Zimmerman reference.

8. The thermoplastic olefin elastomers of the present invention, specifically ethylene-propylene rubbers, ethylene-propylene-diene terpolymer rubbers, and combinations thereof are materials that are considered to be amorphous, they are not capable of developing a significant degree of crystallinity. They are what one would consider to be classical elastomeric materials.

9. I have read the translation of the Japanese Unexamined Patent Application 10-017694 (Kondo) and I understand the membrane taught by this reference. The membranes made by the wet process differ physically from membranes made by the dry process. As one skilled in the art I have first had knowledge that some things that work with the solvent extraction process, will not work with a membrane made by the dry stretch process.

10. As one skilled in the art I would not look to what has been done with membranes made by a solvent extraction process in evaluating a membrane to be made by the dry process.

11. I have read the instant patent application, serial number 10/005,845 and I understand that the

properties of non-porous films have be improved with the addition of fillers and polyisobutylene rubber.

12. As one skilled in the art I know that the dry stretch process changes the physical properties of the underlying material so that a microporous membrane made by the dry stretch process different from a non-porous polymer film.

13. As one skilled in the art I would not look to what has been done with non-porous films in evaluating a membrane to be made by the dry process.

14. The independent claims of the instant application as amended 1, 9 and 12 all requires an increase in performance of the membrane when thermoplastic olefin elastomers are added to the aliphatic polyolefin. Looking at the art, as related to microporous films Kondo fails to teach or suggest this, and Zimmerman teaches that for the dry process method of creating a microporous membrane, that one should use aliphatic polyolefins such as polypropylene and polyethylene which are capable of developing a significant degree of crystallinity, and avoid the addition of classic elastomers such as thermoplastic olefin elastomers such as natural and synthetic rubber.

15. Based on the teachings of the prior art it was unexpected and surprising when we learned that a slight addition of a thermoplastic olefin elastomers, ethylene-propylene rubbers, ethylene-propylene-diene terpolymer rubbers, and combinations thereof, when added to the aliphatic polyolefins, polypropylene and polyethylene,

which are capable of developing a significant degree of crystallinity resulted in improved mechanical strength.

16. The under signed declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: January 16, 2008



Ronald W. Call

Chemist